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# First record of *Burmannia cochinchinensis* Gagnep. (Burmanniaceae) from Kabin Buri District, Prachinburi, Thailand

**Kenji Suetsugu**[1, 3] & **Tomoki Sando**[2]

[1] Department of Biology, Graduate school of Science, Kobe University, 1-1 Rokkodai, Nada-ku, Kobe, 657-8501, Japan
[2] 259 village no. 17 Chokchai-Khonburi Road, Toong Aruan Sub-district, Chokchai district, Nakhon Ratchasima 30190, Thailand
[3] Corresponding author. Email: kenji.suetsugu@gmail.com

**Abstract:** We report a new locality of *Burmannia cochinchinensis* from Kabin Buri District, Prachinburi, Thailand. So far, this species was collected only once at southern Vietnam. A description based on our Thailand material is provided.

**Key words:** new locality; mycoheterotroph; mixotroph

The genus *Burmannia* L. is a diverged achlorophyllous or chlorophyllous group comprising more than 60 species distributed in tropical and warm temperate regions of both the Old and New Worlds (Jonker 1938). While the majority of *Burmannia* species are full mycoheterotrophs found in the dense shade of wet forests, some exceptions have green leaves; these species are autotrophic or partial mycoheterotrophic, and generally occur as sparse individuals in open and often wet habitats (Jonker 1938, 1948).

In the Southeast Asian tropics, about 13 chlorophyllous (i.e., at least partially autotrophic) species of *Burmannia* are known to date (Jonker 1938; Zhang & Saunders 2000; Tsukaya & Darnaedi 2012). *Burmannia coelestis* species complex, represented by *B. coelestis* D. Don, is one of the most common chlorophyllous *Burmannia* in tropical Asia (Zhang & Saunders 2000). We found two chlorophyllous species of *Burmannia* growing in wet grassland at Kabin Buri district, Prachinburi, Thailand. One of these two species *Burmannia* was found to be *B. coelestis* (D.Don). After making a careful examination, the other unknown collections were determined as *B. cochinchinensis* Gagnep., which has been collected only once at southern Vietnam, which is the type locality (Jonker 1938). The following description is based on our Thailand material.

***Burmannia cochinchinensis*** Gagnep., Bull. Soc. Bot. Fr. 54: 463. (Gagnepain 1907)
Figures 1, 2

Chlorophyllous semi-mycotrophic annual herbs. Stem, simple, 16–22 cm, pale green bearing 1–7 flowers at the apex. Roots fibrous, short, white. Roseate leaves few, linear to lanceolate, acute, green, 4–10 mm long. Stem-scales linear to lanceolate, acute, appressed to the stem, 3–8 mm long. Bracts lanceolate, acute, 3–5 mm long. Flowers erect, narrowly 3-winged, purple, about 8–9 mm long. Outer perianth lobes, broad, ovate to triangular, ca. 1.2 mm long, apex obtuse or slightly acute. Inner perianth lobe, spatulate, ca. 0.8 mm long, apex obtuse or slightly retuse. Perianth tube cylindrical-trigonous, ca. 4 mm long. Stamens sessile

**Figure 1.** Flowering plants of *Burmannia cochinchinensis* in its native habitat (Kabin Buri district, Prachinburi, Thailand).

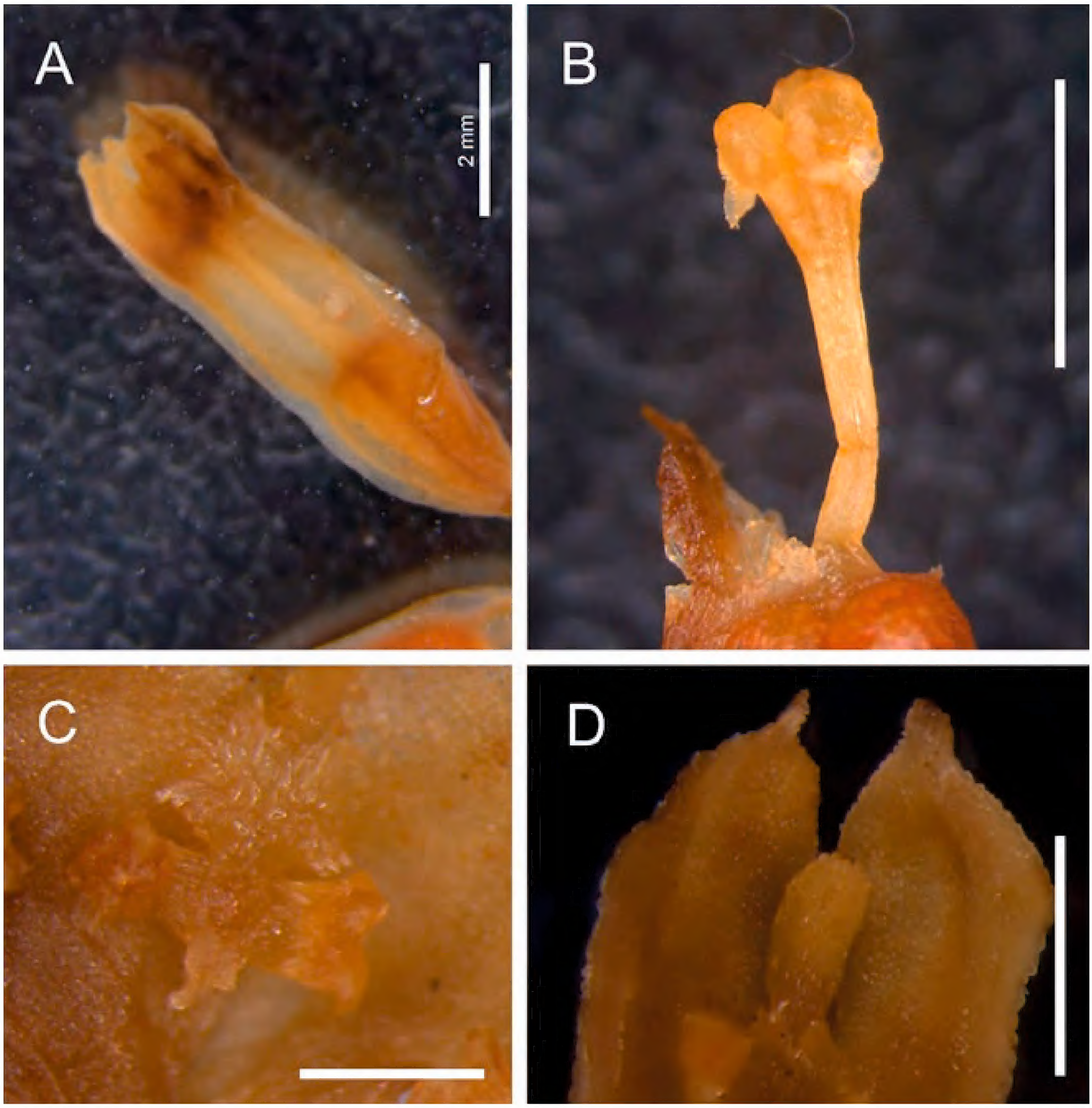


**Figure 2.** Close-up of a *Burmannia cochinchinensis* flower (from Kabin Buri district, Prachinburi, Thailand; *T. Sando 03*). **A.** Flower. **B.** Pistil. **C.** Stamen. **D.** Inner and outer perianth lobes. Scale bars: (A, B) = 2 mm, (C) = 0.5 mm, (D) = 1 mm.

in the perianth-throat; connective with two short lateral arms bearing thecae, two divergent, obtuse crests at the apex and an acute, filiform spur at the base. Style thick-filiform, with 3 curved, funnel-shaped, sessile stigmas at the apex. Style with stigmas, 3–3.5 mm long. Ovary ellipsoid to obovoid, ca. 3 mm long. Flower wings very narrow, linear, running from the top of the limb to below the base of the ovary, ca. 8–9 mm long and 0.3 mm wide.

**Specimen examined:** Thailand, Prachinburi, Kabin Buri district, Nonsi, wet grassland (14°02′13.7″ N, 101°38′54.6″ E), 5 December 2014, Tomoki Sando (The Forest Herbarium; *T. Sando 03*).

**Taxonomic note:** Our specimens are characterized by the flower-wings narrower than the perianth tube (Figure 2A). In addition, In addition, we examined anther morphology, which is the most important character in *Burmannia* for species-level taxonomy(Jonker 1938), and found that our specimens have the anthers with two apical crests and a basal, hanging spur (Figure 2C). These characters are shared with *Burmannia cochinchinensis* and *B. bancana* in Asian *Burmannia* species. However, our materials differ from *B. bancana* in that it has reduced leaves, up to 12 mm (vs. 25–70 mm long for *B. bancana*). The characteristics of the plants in Thailand closely match the description of

**Figure 3.** A map of Thailand showing newly reported locality of *Burmannia cochinchinensis* in the present study (indicated by the star).

*B. cochinchinensis* (Jonker 1938). After the detailed morphological investigation of the other floral organs, we can determine our material to be *B. cochinchinensis* (Figures 1, 2).

**Distribution and phenology:** So far, *Burmannia cochinchinensis* was collected only once in southern Vietnam, at its type locality (Jonker 1938). Therefore, Thailand's population reported in the present study represents the second discovery and northernmost occurrence of this species. The wet grassland is dominated by *Eriocaulon nudicuspe* Maxim., *Xyris indica* L., *Osbeckia cochinchinensis* Cogn. and *Osbeckia chinensis* L. Several hundreds of individuals were observed in the investigated population. The flowering time is in October to December. Currently, the locality is not within a designated conservation area, such as a national park.

Considering hundreds of individuals in the population reported here, this species may not be as rare as previously thought and may be found more widely. *Burmannia cochinchinensis* and other undescribed species may possibly be mistaken for more common *Burmannia* species, which have similar flowering phenology. Because precise identification in the genus *Burmannia* requires the detailed observation of floral organs hidden in the perianth tube, such as anther morphology (Jonker 1938), future detailed morphological investigation will reveal many new taxa and new distributional records.

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**Authors' contributions:** KS and TS collected the data, KS wrote the text, and TS approved the final version of the manuscript.

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